

Water Heater Information

The proceeding information pertains to *water heaters* and includes:

1. Prohibited locations,
2. When to elevate a water heater off the floor,
3. Bracing requirements, and
4. Temperature & Pressure relief valve requirements

1. Prohibited Locations

Gas-fired water heaters, which depend on the combustion of fuel for heat, shall not be installed in the following locations :

1. A room used or designed to be used for sleeping purposes,
2. A bathroom,
3. A clothes closet, **or**
4. In a closet or other confined space opening into a bathroom or bedroom.

Exception: Direct vent water heaters.

Where not prohibited by other regulations, water heaters may be located under a stairway or landing.

2. When To Elevate A Water Heater Off The Floor

Water heaters installed in a garage shall be elevated off the floor.

Note: Water heaters not installed inside a garage, are not required to be elevated.

Water heaters generating a glow, spark or flame capable of igniting flammable vapors may be installed in a garage, provided the pilots, burners or heating elements and switches are at least **18 inches above the floor.**

Note: This requirement applies to **both gas and electric** water heaters.

Where water heaters installed within a garage are enclosed in a separate, approved compartment having access only from outside of the garage, such water heaters may be installed at floor level provided the required combustion air is also taken from the exterior.

Note: When water heaters are installed on a stand or platform base, the base shall be adequately anchored to the floor.

The above requirements apply to water heater installations as follows:

- New water heater installations,
- Water heater replacements, and
- Water heater relocations inside a garage.

3. Water Heater Bracing Requirements

Experience has shown that water heaters can move or tip over during an earthquake if not properly anchored to the walls. Movement of or impact to the water heater may cause leaks in gas piping, which in turn may pose a fire hazard. Water leaks from broken water lines may also cause damage to floors and walls. Because of this recognized potential for damage, Assembly Bill (AB) 1890 was passed into law on September 27, 1989.

AB 1890 requires **all new and replacement water heaters sold in California on or after July 1, 1991, to be braced**, anchored, or strapped to resist falling or displacement due to earthquake motion. This applies for installation of all new water heaters and when water heaters are replaced or relocated.

Water heater bracing requirements are as follows :

1. The Uniform Plumbing Code (UPC) states, water heater strapping shall be at points within the upper one-third and lower one-third of the water heaters vertical dimensions. At the lower point, a minimum distance of four inches shall be maintained above the controls with the strapping. The upper strap is generally installed nine inches below the top of the tank.
2. The Division of the State Architect's Office (DSA) publishes recommendation regarding bracing of water heater. The DSA recommends two methods of bracing water heaters. They are described as the *Tape Method* and the *Conduit Method*.

The *Tape Method* uses only plumber's tape (**24-gauge min.**) with ledgers, bolts and lag screws. The plumbers tape must completely encircle the water heater and be bolted to a 2" X 4" ledger, which is bolted to the wall framing.

Note: A 2" X 4" ledger is required at each strap location.

The *Conduit Method* uses round thinwall conduit along with plumber's tape (**24-gauge min.**), bolts and lag screws.

3. Water heaters up to 52-gallon size shall have two straps minimum. Larger heaters will require additional bracing in proportion to their sizes to a 52 gallon tank (i.e. - 75 gallon would require 3 straps; 100 gallon would require 4 straps).
Note: Some manufacturers make listed straps for water heater installations. Listed bracing straps may be used in lieu of the above methods when installed per the manufacturer's installation instructions.
4. Also, when water heaters are installed on a stand or platform, the stand shall be adequately anchored to the floor.
Note: Water heaters in a garage shall be raised off the floor. Sources of ignition shall be **18" min.** off the floor. This applies to both gas & electric water heaters.

Water heater manufacturers provide installation instructions that should be followed for anchoring water heaters. Also, the Division of the State Architects Office (DSA) publishes recommendations for bracing of water heaters. The DSA recommendations are referenced in the City of San Jose's Water Heater Bracing Policy. Also, the Plumbing Code has specific regulations regarding water heater bracing. Building Inspectors use these documents and their judgement to determine whether water heaters are installed per minimum requirements.

The Water Heater Bracing Policy is available upon request at the Building Division Permit Center. The Building Division will mail or fax this upon request. To request a copy, call (408) 535-3555. Leave a voicemail message requesting a copy of the Water Heater Bracing Policy. The policy is also available on the Building Division's website at www.sanjoseca.gov/building.

Note: No permit is required for voluntary seismic bracing of water heaters.

4. Temperature & pressure relief (T & P) valve requirements –
(For gas water heaters & boilers)

Storage-type water heaters and hot water boilers shall be provided with, in addition to the primary temperature controls, a combination temperature and pressure relief valve (T & P valve). The T & P valve shall be constructed, *listed*, and installed in accordance with nationally recognized applicable standards.

The following 11 items pertain to T & P valve installation requirements:

1. Each T & P valve shall be an approved type with a drain.
2. A union must be installed in the drain line near the water heater to facilitate removal and replacement of the water heater and/or the T & P valve.
Exception: If a water heater can be replaced without adversely effecting the drainpipe installation, the union may be omitted.
3. No shutoff valve shall be installed in the relief valve drain line system.
4. T & P valves located inside a building shall be provided with a drain, not smaller than the relief valve outlet, of galvanized steel, hard drawn copper piping & fittings, or listed relief valve drain tube with fittings which will not reduce the internal bore of the piping.
5. The piping shall extend from the valve to the outside of the building with the end of the pipe not more than two feet nor less than six inches above the ground pointing downward.
Note: It is **not** acceptable to terminate the T & P in the underfloor area.
6. When a water heater is located in a garage, the T & P drainpipe may terminate in the garage. The piping shall extend from the valve to within six inches above the floor and point downward.
Note: Water heaters not located in a garage cannot terminate the T & P drain in the garage. These drain lines must terminate to the outside.
7. T & P drainage piping shall be run independently from other drainage piping.
For example: It is not acceptable to combine T & P drains with A/C condensate drainage piping or water heater drainage piping. Also, it is not acceptable to terminate the T & P drain into a water heater drain pan (*Smitty* pan).
8. The T & P drain shall not be connected to the sanitary sewer.
9. No part of such drain shall be trapped.
10. The terminal end of the drainpipe shall not be threaded.
11. For **water heaters installed in a basement** or in locations where it is not possible for the T & P relief to achieve gravity drainage, a special provision for drainage is allowed. A handout is available at the Permit Center regarding installation procedures for such cases.

Additional information can be obtained by visiting our website at www.sanjoseca.gov/building/, or by calling our Information Inspector's voice mail at (408) 535-3555 and leaving a detailed message.